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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,075	02/17/2006	Stuart Leon Soled	P2002J113	2781
27810 7590 08/27/2009 ExxonMobil Research & Engineering Company P.O. Box 900 1545 Route 22 East Annandale, NJ 08801-0900				
EXAMINER				
OH, TAYLOR V				
ART UNIT		PAPER NUMBER		
1625				
MAIL DATE		DELIVERY MODE		
08/27/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/534,075

**Applicant(s)**

SOLED ET AL.

**Examiner**

Taylor Victor Oh

**Art Unit**

1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 39-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 39-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SD/CS)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/20/09 has been entered.

**The Status of Claims:**

Claims 39-54 are pending.

Claims 39-54 are rejected.

**DETAILED ACTION**

**Priority**

1. It is noted that this application is a 371 of PCT/EP03/12885(11/18/2003), which has a foreign priority document, United Kingdom 0227086.6(11/20/2002).

**Drawings**

2. The drawing filed on 5/06/05 is accepted by the examiner.

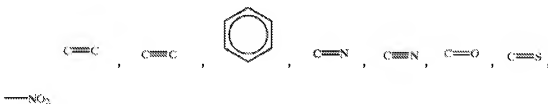
***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 1625

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 39, and 43-53 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for using the compound having following organic groups such as



as the organic compound, does not reasonably provide enablement for any organic compounds generally. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to include all kinds of organic compounds unrelated to the claimed invention commensurate in scope with these claims.

Furthermore, the specification has not described how all kinds of organic compounds in contact with a source of hydrogen in the presence of a catalyst will form naturally the hydrogenation products by the hydrogenation process under unspecified reaction parameters, such as any pressure and any temperature. This description is essential to the claimed invention because it allows to distinguish identifying characteristics sufficient to show that the applicant was in possession of the claimed

invention, and the claim, as a whole, may not be adequately described where the invention is described solely in terms of a process of its making coupled with its reaction conditions, i.e. temperature and pressure suitable for all kinds of the alkynes, alkenes, nitriles, and/or ketones. As a matter of fact, the specification describes that the nature of the organic compound has to be considered in view of the reaction temperature ranges (50 to 250 °C) and pressure ranges (10 to 300 bar); for example, the B.P. of acetonitrile is 81 °C, whereas that of 1,4-dicyanobutane is 295 °C at 1 atm as shown in the Experimental Organic Chemistry Textbook (see page 658, table 28.16, 1980).

Furthermore, the same Experimental Organic Chemistry Textbook, Tables 28.16 and 28.17 have shown that acetonitrile, propionitrile, 1,4-dicyanobutane are in liquid form, whereas 4-methylbenzyl cyanide, cinnamitrile, 1,2-dicyanobenzene are in a solid form. Therefore, it is important to specify the reaction temperature and pressures in order to successfully carry out the reaction process with given starting materials.

Therefore, the specification has failed to describe the subject matter in the claims as to the relationship between all kinds of organic starting materials and the final product during the processing steps of making the desired product.

The specification falls short because data essential for how all kinds of organic starting materials would be led to forming the final desired hydrogenation products by the hydrogenation process.

Furthermore, the instant specification fails to provide information that would allow the skilled artisan to practice the instant invention without **undue experimentation**. Attention is directed to *In re Wands*, 8 USPQ2d 1400 (CAFC 1988) at 1404 where the court set forth the eight factors to consider when assessing if a disclosure would have required undue experimentation, citing *Ex Parte Forman*, 230 USPQ 546 (BdApls 1986) at 547 the court recited eight factors:

- 1) the quantity of experimentation necessary,
- 2) the amount of direction or guidance provided,
- 3) the presence or absence of working examples,
- 4) the nature of the invention,
- 5) the state of the prior art,
- 6) the relative skill of those in the art,
- 7) the predictability of the art, and
- 8) the breadth of the claims.

#### **The Nature of the Invention**

The nature of the invention in claim 1 is described below:

1. (original): A process for hydrogenating an organic compound, which process comprises bringing the organic compound into contact, under hydrogenation conditions, with a source of hydrogen in the presence of a catalyst comprising one or more catalytically active metal sites located on a catalyst support and recovering the hydrogenation products, wherein at least one of the catalytically active metal sites has been obtained via the partial decomposition on the support of a complex of the metal and a nitrogen-containing organic compound selected from (i) amino acids and (ii) compounds containing both an amino group and an alcohol group, partial decomposition having been carried out such that new vibration bands appear in the infra red spectrum of the complex at between 2100-2200  $\text{cm}^{-1}$ .

#### The State of the Prior Art

The states of the prior art are described as followed:

[005] In U.S. Pat. No. 5,286,898 and U.S. Pat. No. 5,319,129, dimethylterephthalate is hydrogenated at  $\geq 40^\circ \text{C}$  and a pressure of from 50 to 170 bar over supported Pd catalysts, which are treated with Ni, Pt and/or Ru to give the corresponding dimethylhexahydroterephthalate. The supports used are alumina of crystalline phase alpha or theta or delta or gamma or beta or mixtures thereof.

[006] In EP-A-0 005 737, aromatic carboxylic esters are hydrogenated at from 70 to 250° C and from 30 to 200 bar over supported Ni, Ru, Rh and/or Pd catalysts to give the corresponding cycloaliphatic carboxylic esters. The support used is an aluminium oxide of which at least 20% has been converted into lithium-aluminium spinel.

[007] U.S. Pat. No. 3,027,398 describes the hydrogenation of dimethylterephthalate over supported Ru catalysts at from 110 to 140° C and from 35 to 105 bar. The Ru is deposited on charcoal or kieselguhr.

[008] EP-A 0 603 825 relates to a process for the preparation of 1,4-cyclohexanedicarboxylic acid by hydrogenating terephthalic acid by using a supported palladium catalyst, wherein as support alumina, silica or active charcoal is used.

[009] U.S. Pat. No. 3,334,149 describes a multistage process for the hydrogenation of dialkylterephthalate using a Pd catalyst followed by use of a copper chromite catalyst.

[010] U.S. Pat. No. 5,936,126 describes a process for the hydrogenation of an aromatic compound. The catalyst used contains ruthenium as active metal alone or optionally with one or more other Group IB, VIIB or VIIIB metals on a macroporous support. The macroporous support exhibits an average pore diameter of at least 50 nm and a BET surface area of not more than about 30 m<sup>2</sup>/g.

[011] U.S. Pat. No. 6,248,924 describes a process for reacting organic compounds. The catalyst used contains ruthenium as active metal alone or optionally with one or more other Group IB, VIIB or VIIIB metals on a support. The support may be a material having macropores (50 to 10000 nm pore diameter) and mesopores (2 to 50 nm pore diameter). In the support 10–50% of the pores are macropores and 50 to 90% of the pores are mesopores. Alumina of surface area (BET) 238 m<sup>2</sup>/g is specifically exemplified.



As the prior art have been discussed in the above, there is no conclusive data that all kinds of starting organic materials would produce the final hydrogenation products except some aromatic compounds such as terephthalic acid, dialkyl terephthalate.

**The predictability or lack thereof in the art**

In the instant case, the instant claimed invention is highly unpredictable since one skilled in the art would recognize that not every any organic starting material would produce the desired hydrogenated products. This is because hydrogenation process needs three components, the unsaturated substrate, hydrogen or hydrogen source, and the specific catalyst; the success of carrying out the reaction depends on the good selection of the substrate and of the specific catalyst with a high activity in combination with adjusting suitable temperatures and pressures.

Furthermore, the specification of the claimed invention does support the very idea of the unpredictable aspect of the organic starting materials by disclosing those specific and workable starting compounds (see pages 19-24) for the process; it does not support all kinds of organic starting materials known in the art.

Moreover, chemical reactions are well-known to be unpredictable, *In re Marzocchi*, 169 USPQ 367, *In re Fisher*, 166 USPQ 18. From the above, it is clear that the use of every generic "an organic compound" will not form the desired claimed product in a good yield.

Therefore, in view of the Wands factors and In re Fisher (CCPA 1970) discussed above, to practice the claimed invention herein, a person of skill in the art would have to engage in undue experimentation to test which acidic catalyst can be employed to produce the desired claimed compound encompassed in the instant claims, with no assurance of success.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 39-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 39-40, 50 and 54, the term "containing" in the phrases "a nitrogen-containing organic compounds" and "compounds containing both an amino group and an alcohol hydroxyl group", and the phrase "at least one or more unsaturated organic compounds include at least one benzenepolycarboxylic acid" are recited. These are vague and indefinite because the specification does not elaborate what is meant by the terms "include" and "containing" which would mean that there are some additional components besides the only compounds; the skilled artisan in the art is unable to figure out what else are present in the compounds.

Therefore, an appropriate correction is required.

In claim 50, the phrase "a nitrogen-containing organic compound is one or more amino acids" is recited. This is vague and indefinite because the phrase "a nitrogen-containing organic compound " is singular and yet it is expressed as the plural. Therefore, an appropriate correction is required.

In claim 53, the phrase " selected from the group consisting of platinum, rhodium,----nickel or ruthenium and a mixture of two or more thereof" is recited.

This is vague and indefinite because the expression of the Markush group " selected from the group consisting of " is closed by its nature and yet it is still open ended because of the presence of the conjunction " or ". Therefore, an appropriate correction is required.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Art Unit: 1625

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8/26/09